

## (12) INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(19) World Intellectual Property  
Organization  
International Bureau



(43) International Publication Date  
3 June 2004 (03.06.2004)

PCT

(10) International Publication Number  
WO 2004/045754 A1

(51) International Patent Classification<sup>7</sup>: B01F 15/00,  
11/00

SG, SL, TT, TZ, UG, VC, ZA, ZM, ZW, SZ, CY, IE only):  
UNILEVER PLC [GB/GB]; UNILEVER HOUSE, Black-  
friars, London, Greater London EC4P 4BQ (GB).

(21) International Application Number:  
PCT/EP2003/012232

(71) Applicant (for IN only): HINDUSTAN LEVER LIM-  
ITED [IN/IN]; Hindustan Lever House, 165/166 Backbay  
Reclamation, Maharashtra, 400 020 Mumbai (IN).

(22) International Filing Date:  
3 November 2003 (03.11.2003)

(72) Inventors; and  
(75) Inventors/Applicants (for US only): ESVELD, Erik  
[NL/NL]; ATO BV, Bornsesteeg 59, NL-6700 AA Wa-  
geningen (NL). HAMOEN, Remco [NL/NL]; ATO BV,  
Bornsesteeg 59, NL-6700 AA Wageningen (NL). HOOG-  
LAND, Hans [NL/NL]; Unilever R & D Vlaardingen,  
Olivier van Noortlaan 120, NL-3133 AT Vlaardingen  
(NL).

(25) Filing Language: English  
(26) Publication Language: English  
(30) Priority Data:  
02079843.5 20 November 2002 (20.11.2002) EP

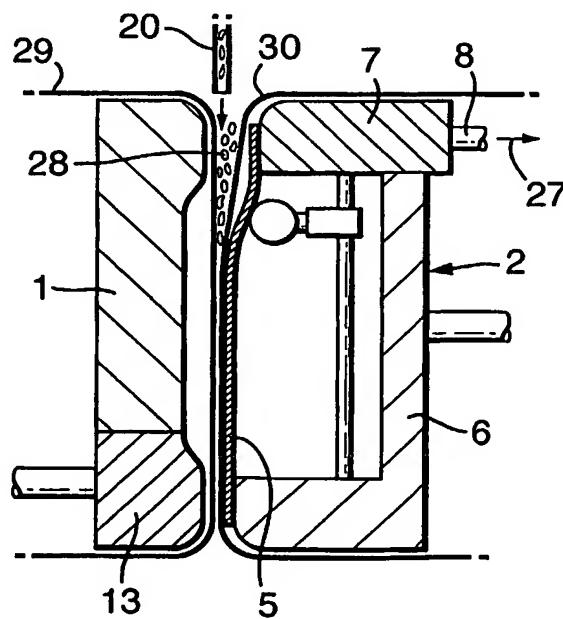
(74) Agent: VAN VELZEN, Maaike, Mathilde; Unilever NV,  
Patent Department, Olivier van Noortlaan 120, NL-3133  
AT Vlaardingen (NL).

(71) Applicant (for AL, AM, AT, AZ, BA, BE, BF, BG, BJ, BR,  
BY, CF, CG, CH, CI, CM, CN, CO, CR, CU, CZ, DE, DK,  
DM, DZ, EC, EE, ES, FI, FR, GA, GE, GN, GQ, GR, GW,  
HR, HU, ID, IS, IT, JP, KG, KP, KR, KZ, LR, LT, LU, LV,  
MA, MC, MD, MG, MK, ML, MR, MX, MZ, NE, NI, NL,  
NO, PH, PL, PT, RO, RU, SE, SI, SK, SN, SY, TD, TG, TJ,  
TM, TN, TR, UA, UZ, VN, YU only): UNILEVER N.V.  
[NL/NL]; UNILEVER N.V., Weena 455, NL-3013 AL Rot-  
terdam (NL).

(81) Designated States (national): AE, AG, AL, AM, AT, AU,  
AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CO, CR, CU,  
CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE,  
GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR,  
KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK,

[Continued on next page]

(54) Title: APPARATUS AND METHOD FOR MIXING COMPONENTS



(57) Abstract: In an apparatus for mixing components in a mixing chamber, those parts of the mixing chamber which will come into contact with the components are defined by a foil material which can be renewed between two successive mixing/processing operations. The mixing chamber may be defined between two co-operating mould parts. The mixing/processing chamber also may be defined by the foil material itself. In a method for mixing components in a mixing chamber such a foil material is renewed between two successive mixing operations. Further there is provided a pre-shaped elongate web of foil material for use in an apparatus.



MN, MW, MX, MZ, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW.

— before the expiration of the time limit for amending the claims and to be republished in the event of receipt of amendments

(84) **Designated States (regional):** ARIPO patent (BW, GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PT, RO, SE, SI, SK, TR), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).

For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.

**Published:**

— with international search report

## INTERNATIONAL SEARCH REPORT

International Application No  
PCT/EP 03/12232A. CLASSIFICATION OF SUBJECT MATTER  
IPC 7 B01F15/00 B01F11/00

According to International Patent Classification (IPC) or to both national classification and IPC

## B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)  
IPC 7 B01F

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

EPO-Internal, WPI Data, PAJ

## C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	US 4 711 582 A (KENNEDY RICHARD B) 8 December 1987 (1987-12-08) abstract; claim 1	1,8
X	DE 35 33 166 A (MUEHLBAUER ERNST DIPL KAUFM) 26 March 1987 (1987-03-26) the whole document	7
X	US 4 951 843 A (PAETOW WILLIAM C) 28 August 1990 (1990-08-28) claim 1	1,8
A	US 3 659 825 A (REITER GABRIEL) 2 May 1972 (1972-05-02) column 1, line 4 - column 2, line 7; figure 1	1,7,8
		-/-

 Further documents are listed in the continuation of box C. Patent family members are listed in annex.

## \* Special categories of cited documents :

- \*A\* document defining the general state of the art which is not considered to be of particular relevance
- \*E\* earlier document but published on or after the international filing date
- \*L\* document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)
- \*O\* document referring to an oral disclosure, use, exhibition or other means
- \*P\* document published prior to the international filing date but later than the priority date claimed

- \*T\* later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention
- \*X\* document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone
- \*Y\* document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art.
- \*&\* document member of the same patent family

Date of the actual completion of the international search

Date of mailing of the international search report

16 March 2004

24/03/2004

Name and mailing address of the ISA

European Patent Office, P.B. 5818 Patentlaan 2  
NL - 2280 HV Rijswijk  
Tel (+31-70) 340-2040, Tx. 31 651 epo nl,  
Fax (+31-70) 340-3016

Authorized officer

Philpott, G

## INTERNATIONAL SEARCH REPORT

International Application No  
PCT/EP 03/12232

## C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

Category	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	US 3 512 332 A (KLEIN KARL) 19 May 1970 (1970-05-19) figure 1 -----	1,8
A	EP 0 891 811 A (HEWLETT PACKARD CO) 20 January 1999 (1999-01-20) the whole document -----	1,7,8,10
A	WO 00/54874 A (FRAUNHOFER GES FORSCHUNG) 21 September 2000 (2000-09-21) the whole document -----	1,7,8,10

**INTERNATIONAL SEARCH REPORT**

Information on patent family members

International Application No

PCT/EP 03/12232

Patent document cited in search report	Publication date	Patent family member(s)		Publication date
US 4711582	A 08-12-1987	NONE		
DE 3533166	A 26-03-1987	DE 3533166 A1		26-03-1987
		WO 8701578 A1		26-03-1987
		EP 0236465 A1		16-09-1987
US 4951843	A 28-08-1990	WO 9102593 A1		07-03-1991
US 3659825	A 02-05-1972	NONE		
US 3512332	A 19-05-1970	AT 274661 B		25-09-1969
		BE 680329 A		03-10-1966
		CH 448485 A		15-12-1967
		DE 1479279 A1		14-05-1970
		GB 1133947 A		20-11-1968
		NL 6605663 A		31-10-1966
		SE 317800 B		24-11-1969
		DE 1486407 A1		16-07-1970
		DE 1461926 A1		27-08-1970
		DE 1486954 A1		26-06-1969
EP 0891811	A 20-01-1999	US 5910288 A		08-06-1999
		EP 0891811 A1		20-01-1999
WO 0054874	A 21-09-2000	WO 0054874 A1		21-09-2000
		DE 59902159 D1		29-08-2002
		EP 1161294 A1		12-12-2001